R12.2 Overview For Developers

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What’s Covered

- What’s an Edition?
- What’s an Online Patch?
- How is Development Affected?
- Examples
- What Can I Do?
What’s an Edition?  (Doc ID 1489116.1)

- An edition is like a workspace or private environment where database objects are redefined. When we are satisfied with the change that we have made, those changes in the edition can be then rolled out to all the application users.

- With Edition-Based Redefinition you can have two objects with the **same** name, as long as they are in **different** Editions.

- An edition is effectively a version label that can be assigned to all editionable objects in a schema.
  - When a new edition is used by a schema, all editionable objects are inherited by the new edition from the previous edition.
  - These objects can subsequently then be altered or dropped as desired, but doing so will stop the inheritance of that object.
  - From Oracle database 11gR2 onwards, each database has at least one edition, the default being ORA$BASE.
  - The default edition can be displayed using the DATABASE_PROPERTIES view.
What Objects Can Be Editioned?
(Doc ID 1489116.1)

The following object types are editionable:

- FUNCTION
- LIBRARY
- PACKAGE and PACKAGE BODY
- PROCEDURE
- TRIGGER
- TYPE and TYPE BODY
- SYNONYM
- VIEW

Review contents of the **APPS** versus **APPS_NE** schemas for details.
What are The Rules for Editioning?
(Doc ID 1489116.1 – there are more…)

A non-editioned object cannot depend on an editioned object.

Some examples:

- A public synonym cannot refer to an editioned object.  
  *(why APPS-owned synonyms take precedence)*

- A function-based index cannot depend on an editioned function.

- A materialized view cannot depend on an editioned view.  
  *(why a lot of MV’s are invalidated in 12.2)*

- A table cannot have a column of a user-defined data type  
  (collection or Abstract Data Type/ADT) whose owner is editions-enabled  
  *(APPs is, APPS_NE isn’t.)*

- A noneditioned subprogram cannot have a static reference to a  
  subprogram whose owner is editions-enabled.  
  *(APPs_NE.<package> cannot reference APPS.<function>)*
**Editioning Example: PTCHARMK**  
(adop phase=prepare *in-progress*)

- SQL Statement which produced this data:
  ```sql
  SELECT * FROM dba_editions;
  ```

<table>
<thead>
<tr>
<th>EDITION_NAME</th>
<th>PARENT_EDITION_NAME</th>
<th>USABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORA$BASE</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>V_20140428_1435</td>
<td>ORA$BASE</td>
<td>YES</td>
</tr>
</tbody>
</table>
What’s an Edition? (Doc ID 1489116.1)

- SELECT property_value
  FROM database_properties
  WHERE property_name = 'DEFAULT_EDITION';

  PROPERTY_VALUE
  ORA$BASE

- ALTER SESSION SET edition=V_20140428_1435;

- SELECT SYS_CONTEXT('USERENV', 'SESSION_EDITION_NAME')
  AS edition FROM dual;

  EDITION
  V_20140428_1435
What’s an Online Patch? (Doc ID 1583902.1)

• Online patching is a new patching mechanism that allows the application of patches while the system is up and running, and the users are working as normal (% while ensuring object version consistency.)

• What are the phases that make up the Online Patching cycle?
  – Prepare a virtual copy (patch edition) of the running application (run edition).
  – Apply patches to the patch edition of the application.
  – Finalize the system in readiness for the cutover phase.
  – Cutover to the patch edition and make it the new run edition.
  – Cleanup obsolete definitions or data to recover space.

• When a patch is applied, adop will:
  – Synchronize the contents of the run file system to the patch file system. (phase=prepare)
  – Apply patching actions on the patch file system. (phase=apply)
  – During the cutover phase, the adop utility (phase=cutover) :
    • Restarts the application tier services.
    • Swap [Patch FS] ↔ [Run FS]
Online Patching: The Filesystem

- /u01
  - fs1/
  - fs2/
  - fs_ne/
  - inst/
  - oralInventory/

$ORACLE_BASE
$RUN_BASE -or-
$PATCH_BASE

Non-Editioned FS
$INST_TOP
Installer Inventory

Note: Database-Tier $ORACLE_HOME is not Editioned
Online Patching: The Environment

```bash
applptch@aburpaofinm01 $> set | grep BASE
JAVA_BASE=/u01/fs1/EBSapps/comn/java
PATCH_BASE=/u01/fs2
RUN_BASE=/u01/fs1

applptch@aburpaofinm01 $> set | grep APPL [selected items]
APPL_CONFIG_HOME=/u01/fs1/EBSapps/appl
APPLCSF=/u01/fs_ne/inst/PTCHARMK_aburpaofinm01/logs/appl/conc
APPLFENV=PTCHARMK_aburpaofinm01.env
APPLPTMP=/usr/tmp
APPLTMP=/u01/inst/fs1/inst/apps/PTCHARMK_aburpaofinm01/appltmp
APPL_TOP=/u01/fs1/EBSapps/appl
APPL_TOP_NE=/u01/fs_ne/EBSapps/appl

applptch@aburpaofinm01 $> set | grep EDITION
FILE_EDITION=run
```
Online Patching: Switching Envs
(Doc ID 1545584.1 – Requires 12.2.2 minimum)

Change directory to the Base directory and run script EBSapps.env giving "run" or "patch" as argument, eg:

```
cd /u01/oracle/EBS122
./EBSapps.env run
```

E-Business Suite Environment Information
----------------------------------------
RUN File System : <EBS base dir>/fs1/EBSapps/appl
PATCH File System : <EBS base dir>/fs2/EBSapps/appl
Non-Editioned File System : <EBS base dir>/fs_ne
DB Host: <hostname.domain name> Service/SID: <SID>

Sourcing the RUN File System ...

If EBSapps.env is run without the file system type as an argument this will be prompted for, eg:

```
./EBSapps.env
```

E-Business Suite Environment Information
----------------------------------------
RUN File System : <EBS base dir>/fs1/EBSapps/appl
PATCH File System : <EBS base dir>/fs2/EBSapps/appl
Non-Editioned File System : <EBS base dir>/fs_ne
DB Host: <hostname.domain name> Service/SID: <SID>

E-Business Suite Environment Setting
------------------------------------
- Enter [R/r] for sourcing Run File System Environment file, or
- Enter [P/p] for sourcing Patch File System Environment file, or
- Enter anything else to exit

Would you like to set the E-Business Suite environment [R/P]: R

Sourcing the RUN File System ...
Online Patching: Switching Envs
(Doc ID 1545584.1 – for PTCHARMK at 12.2.0)

Use fsauto<SID>.sh *(already included in the applptch .profile)*

```
   cd ~
   ./fsauto${ORACLE_SID}.sh
```

Running fsauto 1.0 :
- **Context Name (<SID_host>)** : PTCHARMK_aburpaofinm01
- **RUN Edition APPL_TOP** : /u01/fs1
- **PATCH Edition APPL_TOP** : /u01/fs2
- **APPL_TOP environment file** : /u01/fs1/EBSapps/appl/APPSPTCHARMK_aburpaofinm01.env
- **Non-Editioned File System** : /u01/fs_ne/EBSapps/appl
- **Instance Top Directory** : /u01/inst/fs1/inst/apps/PTCHARMK_aburpaofinm01
- **Admin Scripts Home** : /u01/inst/fs1/inst/apps/PTCHARMK_aburpaofinm01/admin/scripts

Setting **RUN Edition APPL_TOP environment for /u01/fs1** ...

Done.

Current **PATCH_TOP** : /mnt/nfs/ebs/122postinstall

applptch@aburpaofinm01 $>
What’s an Online Patch?
(Checking for Active Patching Sessions)

SELECT ADOP_SESSION_ID, PREPARE_STATUS, APPLY_STATUS, FINALIZE_STATUS, CUTOVER_STATUS, CLEANUP_STATUS, ABORT_STATUS, STATUS, ABANDON_FLAG, NODE_NAME
FROM AD_ADOP_SESSIONS
ORDER BY ADOP_SESSION_ID;

Note:
Y denotes that the phase is done
N denotes that the phase has not been completed
X denotes that the phase is not applicable
R denotes that the phase is running (in progress)
F denotes that the phase has failed
P (is applicable only to APPLY phase) denotes at least one patch is already applied for the session id
C denotes that the status of this ADOP session has completed

Note:
The following Numerical statuses are only relevant for the cutover phase...

These status values are updated when a step has completed, and are as follows:

N denotes that the phase has not been completed
0 denotes that cutover/force_shutdown has started
1 denotes the "force_shutdown" step has successfully executed
3 denotes the "db_cutover" step has successfully executed
4 denotes the "fs_cutover" step has successfully executed
6 denotes the "force_startup" step has successfully executed
Y denotes that the phase is done
What’s an Online Patch?  
(Why should I care?)

Q: Based on the below information querying the `AD_ADOP_SESSIONS` table in PTCHARMK:

1. Which patching session will go first, and when?
2. Which filesystem (`fs1` or `fs2`) and edition is Run versus Patch?
3. Where should my custom object/code/form/report go to test in this instance?

<table>
<thead>
<tr>
<th>ADOP_SESSION_ID</th>
<th>PREPARE_STATUS</th>
<th>APPLY_STATUS</th>
<th>FINALIZE_STATUS</th>
<th>CUTOVER_STATUS</th>
<th>CLEANUP_STATUS</th>
<th>ABORT_STATUS</th>
<th>STATUS</th>
<th>ABANDON_FLAG</th>
<th>NODE_NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>C</td>
<td></td>
<td>aburpaofinm01</td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td>Y</td>
<td>N</td>
<td>X</td>
<td>Y</td>
<td>X</td>
<td>C</td>
<td></td>
<td>aburpaofinm01</td>
</tr>
<tr>
<td>5</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>F</td>
<td>5</td>
<td>aburpaofinm01</td>
</tr>
</tbody>
</table>
What’s an Online Patch?  
(Why should I care?)

Q: Based on the below information querying the AD_ADOP_SESSIONS table in PTCHARMK:
1. Which patching session will go first, and when?
2. Which filesystem and edition is Run versus Patch?
3. Where should my custom object/code/form/report go to test in this instance?

A:
1. You cannot tell from the information provided.
2. You cannot tell from the information provided.
3. It depends…
   a) Was PRODARMK in the middle of a patching cycle when copied?
   b) When is the current active patching cycle in this instance scheduled for phase=cutover?
   c) Is a **Base EBS** object being modified (which might be subject to one of the patches overwriting it)?
Examples: Editioned View  
(Why we use APPS.AR_DEBUG instead of AR.AR_DEBUG)

- /* ObjName | ObjType | ObjParent | ObjOwner
- AR_DEBUG | TABLE | | AR
- AR_DEBUG# | VIEW | | AR
- AR_DEBUG | SYNONYM | | APPS

- Synonym APPS.AR_DEBUG */
- /* Formatted on 5/1/2014 3:26:22 PM (QP5 v5.256.13226.35510) */
- CREATE OR REPLACE FORCE EDITIONING VIEW AR.AR_DEBUG#
- ( DEBUG_TYPE,
  ITEM_TYPE,
  ITEM_KEY,
  ACTIVITY_NAME,
  EXECUTION_DATE,
  DEBUG_MESSAGE
  )
  AS
  SELECT DEBUG_TYPE DEBUG_TYPE,
  ITEM_TYPE ITEM_TYPE,
  ITEM_KEY ITEM_KEY,
  ACTIVITY_NAME ACTIVITY_NAME,
  EXECUTION_DATE EXECUTION_DATE,
  DEBUG_MESSAGE DEBUG_MESSAGE
  FROM "AR"."AR_DEBUG";

- CREATE OR REPLACE SYNONYM APPS.AR_DEBUG FOR AR.AR_DEBUG#;

- GRANT DELETE, INSERT, SELECT, UPDATE, DEBUG ON AR.AR_DEBUG# TO APPS WITH GRANT OPTION;

- GRANT SELECT ON AR.AR_DEBUG# TO XXUSR_SELECT_R;
Examples: PL/SQL Package
(APPS.ACCOUNT_MGR)

CREATE OR REPLACE PACKAGE APPS.ACCOUNT_MGR AUTHID CURRENT_USER AS
  /* $Header: JTPAACS package 1 2009/07/02 01:59:21 appdev ship $ */
  FUNCTION query_accounts(API_VERSION IN NUMBER DEFAULT 1.0,
                           P_PARTY_ID IN NUMBER DEFAULT 1220) RETURN VARCHAR2;
  PROCEDURE test(API_VERSION IN NUMBER DEFAULT 1.0,
                 P_PARTY_ID IN NUMBER DEFAULT 1220);
END ACCOUNT_MGR;
/
- # -> Editioned View
- APPS_NE -> Non-editioned schema
- Note the use of synonyms -> views -> tables
How is Development Affected?  
(Doc ID 1489116.1)

• Not using an APPS.<editioned object synonym>
  – Views: disappearing/appearing columns, indexes, even data
  – PL/SQL: dropped/altered/changed API’s, usage, references
  – Triggers: disappearing/appearing constraints, functional changes
  – Types: disappearing/appearing columns, indexes, even data
  – Synonyms: pointers change: Views ⇔ Tables, all the above

• Invalid Objects Appear After Patching

• Functional Code Behavior Changes After Patching

• If another Developer is using an Edition:

  The DEFAULT_EDITION can change without warning
What to Do?

- Always Be **Aware** of other Patching or Development activity going on in the instance

- Stage Filesystem-based Code in **both** RUN_BASE and PATCH_BASE

- *Scheduling* of Data Changes is **Critical** (*changes can vanish*)

- **Announce** to all other Users if Creating/Cutting-Over a New Edition

- **Flag** all Base-Object Customizations for Detection during PPA
How to Flag a Customization
(OAM -> Site Map -> [Maintenance] -> Register Flagged Files)

Flagged Files are only useful when stored in Production (PRODARMK)
Comments:

**MKS <ref#>**
- Description of what changed.
MOS References
(support.oracle.com - CSI: 19086017)

• Deploying Customizations in Oracle E-Business Suite Release 12.2
  (Doc ID 1577661.1)
• Master Note: Overview of Oracle Edition-Based Redefinition (EBR)
  (Doc ID 1489116.1)
• Oracle E-Business Suite Release 12.2: Online Patching FAQ
  (Doc ID 1583902.1)
• Oracle Application Framework Release Notes for Release 12.2.3
  (Doc ID 1593782.1)
• Where to Deploy Custom Java [default: $JAVA_TOP/*]
  (Doc ID 1609939.1)
• Oracle E-Business Suite Release 12.2 Information Center
  (Doc ID 1583153.1)